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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,832	11/21/2003	Y. Long He	10559-583002	1330

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EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/718,832

Applicant(s)

HE ET AL.

Examiner

Jeffrie R. Lund

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-41 is/are pending in the application.
- 4a) Of the above claim(s) 32-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 32-41 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The apparatus of claims 24-31 and the method of claims 32-41 are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, such as, a CVD process or an etching process that uses only CF₄.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 32-41 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

Art Unit: 1763

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 24-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Hongoh, US Patent 6,343,565 B1.

Hongoh teaches a plasma processing apparatus that includes: a chamber S; a support 24 for supporting a wafer (plate) W; a high frequency source 76; and an inlet structure comprising a first gas supply 54 connected to a first inlet 38 via a first flow controller 46, and a second gas supply 56 connected to a second inlet 40 via a second flow controller 48. (Figure 5)

The particular type of gas used is a process limitation rather than an apparatus limitation, and the recitation of a particular type of gas does not so limit an apparatus claim, see *In re Casey*, 152 USPQ 235; *In re Rishoi*, 94 USPQ 71; *In re Young*, 25 USPQ 69; *In re Dulberg*, 129 USPQ 348; *Ex parte Thibault*, 164 USPQ 666; and *Ex parte Masham*, 2 USPQ2d 1647. This rejection is based on the fact that the apparatus of Hongoh has the inherent capability of supplying the desired gases intended by the Applicant. Furthermore, It has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus

teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

The specific type of substrate (i.e. quartz) worked on (i.e. etched) is an intended use of the apparatus. This rejection is based on the fact that the apparatus structure of Hongoh has the inherent capability of working on (i.e. processing) a quartz substrate, as intended by the Applicant. It has also been held that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

The only structural limitation in claims 27-31 is a chamber in which a plasma containing multiple gases is formed. Hongoh teaches such a chamber.

Claims 29-31 deal directly with how the apparatus is used. The limitations are specifically connected to the type of gases supplied and the specific mixture of these gases. The Examiner can find no structure taught by the applicant that directs or controls the gases to achieve these process limitations (i.e. showerhead, baffle) other than the generic gas inlet system. In fact, the only way to achieve these process limitations taught by the Applicant is to control the mixture or ratio of the gases delivered to a known apparatus.

4. Claims 24-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Hanawa et al, US Patent 6,634,313 B2.

Hanawa et al teaches a plasma etching apparatus that includes: a chamber 12; a support 74 for supporting a substrate (plate) 32; a high frequency source 124; and an inlet structure comprising a first gas supply 92 connected to a first inlet 71 via a first flow controller 42, and a second gas supply 94 connected to a second inlet 70 via a second flow controller 42. (Figure 1)

The particular type of gas used is a process limitation rather than an apparatus limitation, and the recitation of a particular type of gas does not so limit an apparatus claim, see *In re Casey*, 152 USPQ 235; *In re Rishoi*, 94 USPQ 71; *In re Young*, 25 USPQ 69; *In re Dulberg*, 129 USPQ 348; *Ex parte Thibault*, 164 USPQ 666; and *Ex parte Masham*, 2 USPQ2d 1647. This rejection is based on the fact that the apparatus structure of Hanawa et al has the inherent capability of supplying the desired gas intended by the Applicant. Furthermore, It has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

The specific type of substrate (i.e. quartz) worked on (i.e. etched) is an intended use the apparatus. This rejection is based on the fact that the apparatus structure of

Art Unit: 1763

Hanawa et al has the inherent capability of working on (i.e. processing) the quartz substrate intended by the Applicant. It has also been held that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." In re Young, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 136 USPQ 458, 459 (CCPA 1963).

The only structural limitation in claims 27-31 is a chamber in which a plasma containing multiple gases is formed. Hanawa et al teaches such a chamber.

Claims 29-31 deal directly with how the apparatus is used. The limitations are specifically connected to the type of gases supplied and the specific mixture of these gases. The Examiner can find no structure taught by the applicant that directs or controls the gases to achieve these process limitations (i.e. showerhead, baffle) other than the generic gas inlet system. In fact, the only way to achieve this process limitations taught by the Applicant is to control the mixture or ratio of the gases delivered to a known apparatus.

5. Claims 24-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Collins, US Patent 6,736,931 B2.

Collins et al teaches a plasma etching apparatus that includes: a chamber 40; a support 54 for supporting a wafer (plate) 56; a high frequency source 68; and an inlet structure comprising a first gas supply connected to a first inlet 64a via a first flow

controller, and a second gas supply connected to a second inlet 64b-64d via a second flow controller.

The particular type of gas used is a process limitation rather than an apparatus limitation, and the recitation of a particular type of gas does not so limit an apparatus claim, see *In re Casey*, 152 USPQ 235; *In re Rishoi*, 94 USPQ 71; *In re Young*, 25 USPQ 69; *In re Dulberg*, 129 USPQ 348; *Ex parte Thibault*, 164 USPQ 666; and *Ex parte Masham*, 2 USPQ2d 1647. This rejection is based on the fact that the apparatus structure of Collins et al has the inherent capability of supplying the desired gas intended by the Applicant. Furthermore, It has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

The specific type of substrate (i.e. quartz) worked on (i.e. etched) is an intended use of the apparatus. This rejection is based on the fact that the apparatus structure of Collins et al has the inherent capability of working on (i.e. processing) the quartz substrate intended by the Applicant. It has also been held that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in

determining patentability of the apparatus claim." Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." In re Young, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 136 USPQ 458, 459 (CCPA 1963).

The only structural limitation in claims 27-31 is a chamber in which a plasma containing multiple gases is formed. Collins et al teaches such a chamber.

Claims 29-31 deal directly with how the apparatus is used. The limitations are specifically connected to the type of gases supplied and the specific mixture of these gases. The Examiner can find no structure taught by the applicant that directs or controls the gases to achieve these process limitations (i.e. showerhead, baffle) other than the generic gas inlet system. In fact, the only way to achieve this process limitations taught by the Applicant is to control the mixture or ratio of the gases delivered to a known apparatus.

6. Claims 24-31 are rejected under 35 U.S.C. 102(A) as being clearly anticipated by Applicants disclosed prior art.

After describing the apparatus found in Figure 1 the applicant further discloses that "A suitable plasma chamber apparatus is available as model VRL-ME-II-M-QTZ from Unaxis, St. Petersburg, Florida." (See the specification page 14 lines 13-15)

Response to Arguments

7. Applicant's arguments filed October 18, 2004 have been fully considered but they are not persuasive.

In regard to the argument that "The limitation "a substrate comprising a quartz plate" recites structure, and is not an "expression relating the apparatus to contents thereof".", the Examiner disagrees. As discussed above, the quartz plate is a substrate that is processed (i.e. etched) by the apparatus. It is not a structural element, and does not enable the apparatus to function. The apparatus would function the same if the substrate were replaced with another type of substrate such as a silicon wafer. The structural elements include the chamber, a support supporting the quartz plate, a high frequency power source, the gas supplies, and inlet structure. If any of these elements were removed the apparatus would not function. Please note that if the quartz plate (substrate) is removed, the Apparatus will still function by forming a plasma using etching gases, which is commonly done to clean the chamber.

In regard to the argument directed to In re Young, the Examiner disagrees. In re Young was properly applied. The limitation of a substrate was considered. All of the rejections include a substrate being processed. The specific material of substrate processed was considered, and it was determined that the apparatus of Hongoh, Hanawa et al, and Collins et al were all inherently capable of processing a quartz substrate. The processing of a quartz substrate using SF₆ and CF₄ (etc) is well known in the art as suggested by Oda et al in "X-ray mask fabrication technology for 0.1 μm very large scale integrated circuits" (See SiO₂ etching).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The claims could also be rejected under 35 USC § 103 if

Art Unit: 1763

Hongoh, Hanawa et al or Collins et al were combined with Oda et al. The combination would teach the claimed structure, processing gases used, and quartz substrate. This rejection was not made because the Examiner believes it is not needed in view of the 102 rejections above.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

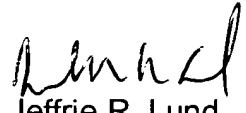
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrie R. Lund
Primary Examiner
Art Unit 1763

JRL
1/24/05